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ABSTRACT

Linkages should be created between and among educational institutions and businesses in America. Both will profit as a result of increased productivity. At least four major categories of need, experienced both in the workplace and in education, can be addressed effectively through joint effort. These are human resource needs: need to upgrade and revitalize personnel: information exchange: and problem solving. An example of one type of arrangement that will illustrate the type of benefits which will accrue to both colleges and businesses is cooperative education. Five interrelated elements are neccesary to achieve an effective work-education relationship: taken together, they constitute a process that can be illustrated by means of a flow chart. These elements are the following: (1) an attitude that the exchange will be mutually beneficial: (2) a problem, need, question, or issue to be addressed: (3) a reaching out by one of the parties--education or business person: (4) a working phase, during which a collaborative relationship develops: and (5) assessment and evaluation of the mutual usefulness of the association. A number of possible needs and possible collaborative activities for meeting them are suggested. (KC)

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Models For Collaboration: Developing Work-Education Ties

For

The American Society For Training And Development

By

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August, 1980

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This manuscript addresses the matter of creating linkages between and among our institutions of work and education. Without question, our society and the quality of life it engenders is shaped, and greatly so, by these twin forces. Not only do work and education each make strong impact on our nation by fulfilling their individual functions, but they are interdependent. Businesses have human resource needs and look to educational establishments for assistance. Educational institutions offer courses of study which they hope business will validate by employing their graduates. Corporations seeking to assert individual initiative over the distribution of some of their profits establish foundations to award grants to colleges and universities. Faculty seeking to undertake research and developmental projects look to corporations as possible sources of support. Industry seeking to upgrade its personnel, look to educational institutions to provide needed studies. College presidents look to business and industry for financial support.

Clearly, they are interdependent and just as clearly, they do interact. For the most part that interaction takes place, as F. W. Steckmest of the Shell Oil Company has observed, between "... placement officers and recruiters, development officers and foundation officials, continuing education courses and young aspiring executives, entrepreneurial professors and corporate clients, and university presidents as corporation directors and corporate presidents as university trustees."[1] These interactions have proved mutually

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[1]J.W. Steckmest, "Creating Coalitions For Cooperation: New Dimensions in Higher Education - Business Relationships." Paper given at 62nd Annual Meeting, American Council on Education, 1979, p. 1.

beneficial and again, as Steckmest notes, "... almost invariably create goodwill between counterparts in both communities."[2]

When one considers all of the colleges and universities across the country and the thousands more secondary schools which interact in one or more of these ways with several businesses each, it is inescapably obvious that a great deal of relating between work and education goes on. Yet, there persists a strained gap between them, not unlike two nations eyeing each other, knowing that each is dependent upon the other but suspicious of one another's motives. Willard Wirtz makes the point that our institutions of work and education must cease to think of themselves as separate worlds and begin to realize they are integral and coordinate parts of a single world -- life.[3] It is to address this issue that this manuscript is written.

People who have recognized that the problem exists and, further, believe the doctrine of synergy applies have called for innovative approaches to stimulate more and effective interrelationships. My experience suggests that in matters of this sort innovations occur in consequence to diligent problem solving effort and that interrelationships develop when there is mutual recognition that interaction will contribute to the solution of problems. In brief, it seems to me that, for example, representatives of a college and a business will get together only if one or the other or both has

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[2]Op. cit., p. 1.

[3]Willard Wirtz, The Boundless Resource (Washington, D.C.: The New Republic Book Co., Inc., 1975).

some problem they think the other can help them solve; any innovative approaches to fostering interaction will come as they try to figure out how to go about working together on the problem. The relationship, however structured, is likely to continue and surely should continue so long as, and only as long as, it seems mutually beneficial.

BENEFITS OF COLLABORATION

If the workplace and education interact and, where indicated, actively collaborate, a variant of the old Gestalt psychology principle will obtain: their total productivity will be greater than the sum of their separate productivities, had they worked independently or in opposition. Clearly the obvious long-term benefactor of creative collaboration by two of America's major forces would be America, itself.

This increased productivity on the part of both our institutions of higher learning and business and industry would occur as the result of several outcomes of collaboration. First, in consequence of communication and working together, there would be the discovery (or at the least, reaffirmation that common goals, and common problems to their achievement exist and there would be a growing understanding and appreciation for the other. In place of apprehension and suspicion, understanding and trust would evolve. This attitude would, in turn, encourage further sharing, mutual planning, and collaborative action. Second, because of

increased and more effective communication and feedback planning and implementation will become more efficient. Third, again, because of increased communication the staff of both educational institutions and of business and industry will, themselves, become more effective and, hence, more productive.

In addition to long-term increased productivity, institutions of higher education and business and industry would experience a number of direct and more immediate benefits. The most general and obvious result of collaboration will be to achieve the immediate objectives sought by the effort. If, for example, a joint attack on some technical problem were undertaken, the likely outcome would be the total or, at least, partial solution of the problem; if an on-site program to upgrade industrial personnel were instituted which involved joint planning of industry and education staff and on-site participation of educators, the anticipated upgrading would probably be achieved.

There are at least four major categories of need, experienced both in the workplace and in education, which can be addressed effectively through joint effort. These are: human resource needs; need to upgrade and revitalize personnel; information exchange; and problem solving. In each of these areas, there are potential strategies which will address the issue to the mutual benefit of the collaborators. In a later section of this manuscript suggestions for specific arrangements to meet these needs are offered.

An example of one kind of arrangement is described here to

illustrate the benefits they can accrue to the participants of collaboration. The example is cooperative education programs of which are found in over one thousand institutions of higher education and in many thousands of businesses and industries. The cooperative plan is one in which students spend some portion of their total educational program working productively in business or industry. Each of the major participants of this voluntary arrangement has unique reasons for participating. Institutions typically establish cooperative programs because they are persuaded that it provides a superior education, or because they view it as a means of relating more closely to the community, or because it can greatly assist in the recruitment of students. Students elect to participate in cooperative education programs because it offers opportunity to explore career possibilities or to test tentative career choices, or it provides important experience and employer contacts for achieving after-graduation fulltime employment, or it furnishes needed income while attending college. Employers have two principal reasons for their involvement in cooperative education. First, they have jobs that need to be performed and students constitute a source of able, upward-striving employees. Second, they seek a flow of capable fulltime talent.

It is not at all surprising that, in fact, each of the constituent parties to this collaborative arrangement do, for the most part, achieve the objectives they seek. These values to

participants of cooperative education are well documented.[4]

In light of the benefits that can accrue to the individual parties, which engage in these joint activities, and to society as a whole as a consequence deliberate and planned interaction with strong conviction that work and education are vital, integral, and interconnected parts of one world, with the further belief that both will fulfill their separate missions more ably if they find reasons for and ways to close the gap between them, and with the certain knowledge that benefits accrue to the participants of collaboration, this manuscript will do three things: first, it will propose a process for effective interrelationships; second, it will propose an approach to establishing linkages; and third, it will suggest a number of designs for collaboration.

A PROCESS FOR ACHIEVING WORK-EDUCATION TIES

There are five interrelated elements to achieving effective work-education relationships. Taken together they constitute a

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[4]The following citations provide documentation of the values of cooperative education: (with ref. to institutions, students, and employers): Wilson, James W. and Lyons, Edward H., Work Study College Programs, Harper and Brothers, N.Y., 1961; Knowles, Asa S. and Associates, Handbook of Cooperative Education, Jossey-Bass, San Francisco, 1971; Frankel, Steven, et al., Cooperative Education--A National Assessment, Applied Management Sciences, Silver Spring, Maryland, 1977; Developing and Expanding Cooperative Education, James W. Wilson, ed., (New Dimensions In Experiential Learning, No. 2), Jossey-Bass, San Francisco, 1978; (with ref. to employer benefits) the entire issue of The Journal of Cooperative Education, Vol. XIV, No. 2, March 1978.

process. This section of the paper will describe this necessary process.

The first element of the process is that individuals in education and business must be or become persuaded that they can find solutions to real problems, obtain assistance in fulfilling real needs, find answers to important questions or gain insight into some significant issue through relationship, one with the other. This attitude is necessary and minimal if any meaningful collaborative action is to begin. If a relationship is to continue and flourish, this attitude must be continuously reinforced and reconfirmed.

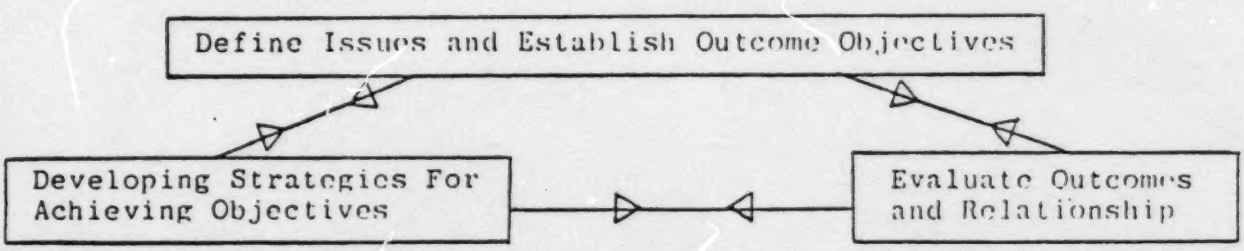
The second element is that there must be, in fact, some problem, need, question or issue to be addressed. In my experience, efforts to develop relationships between different groups fail, if their basis is only that such relationships are good. I have observed numerous instances of this when colleges have appointed an outside advisory group for some program or curriculum area but fail to give the group anything to do. Invariably, within a short time they became defunct. Hence, there must be a real reason for affiliation, if it is to prove effective.

The third element in this process is that someone, education or business person, must reach out to the other. This is so obvious as to seem mundane. But so often we are reluctant, for whatever reason, to make that necessary first contact. Unless it is made, there simply can be no evolving relationship.

The fourth element is the working phase, the point at which collaborative relationship, if it is to develop, does develop. This is the element of developing procedures strategies, programs for achieving the outcomes which motivated the interaction. What these strategies will be, whether the simple getting together of two individuals or complex programs, will depend upon the nature of the problem or issue that brought education and work together. If innovative approaches to coordinate activity and interrelationship are to be developed, it is here that it will occur.

The fifth and final element is one of assessment and evaluation. It is essential, if long range collaborative associations are to be established, that periodically the mutual usefulness of the association be assessed: "How well is it achieving the outcomes it set out to achieve?" "If not achieving as well as hoped for, why not?" "Has the association outlived its value?" "Are there new issues that might profitably be addressed or new approaches to effective collaboration that might be tried?" These are important questions and they, along with others, must be periodically raised and answered, if any collaborative effort is to continue to effectively serve its constituent members.

The interactive and relational elements of this process may be depicted schematically as follows:


Define Issues and Establish Outcome Objectives
Developing Strategies For Achieving Objectives
Evaluate Outcomes and Relationship

This schematic shows clearly that the relationship is established in order to achieve definable outcomes, that it develops in ways designed to achieve those objectives and that is assessed in terms of both the objectives and the activities pursued to achieve them. It does not depict but assumes that those who engage in the process have real problems to address and believe that interaction will contribute to their solution.

A MODEL TO ESTABLISH COLLABORATIVE TIES

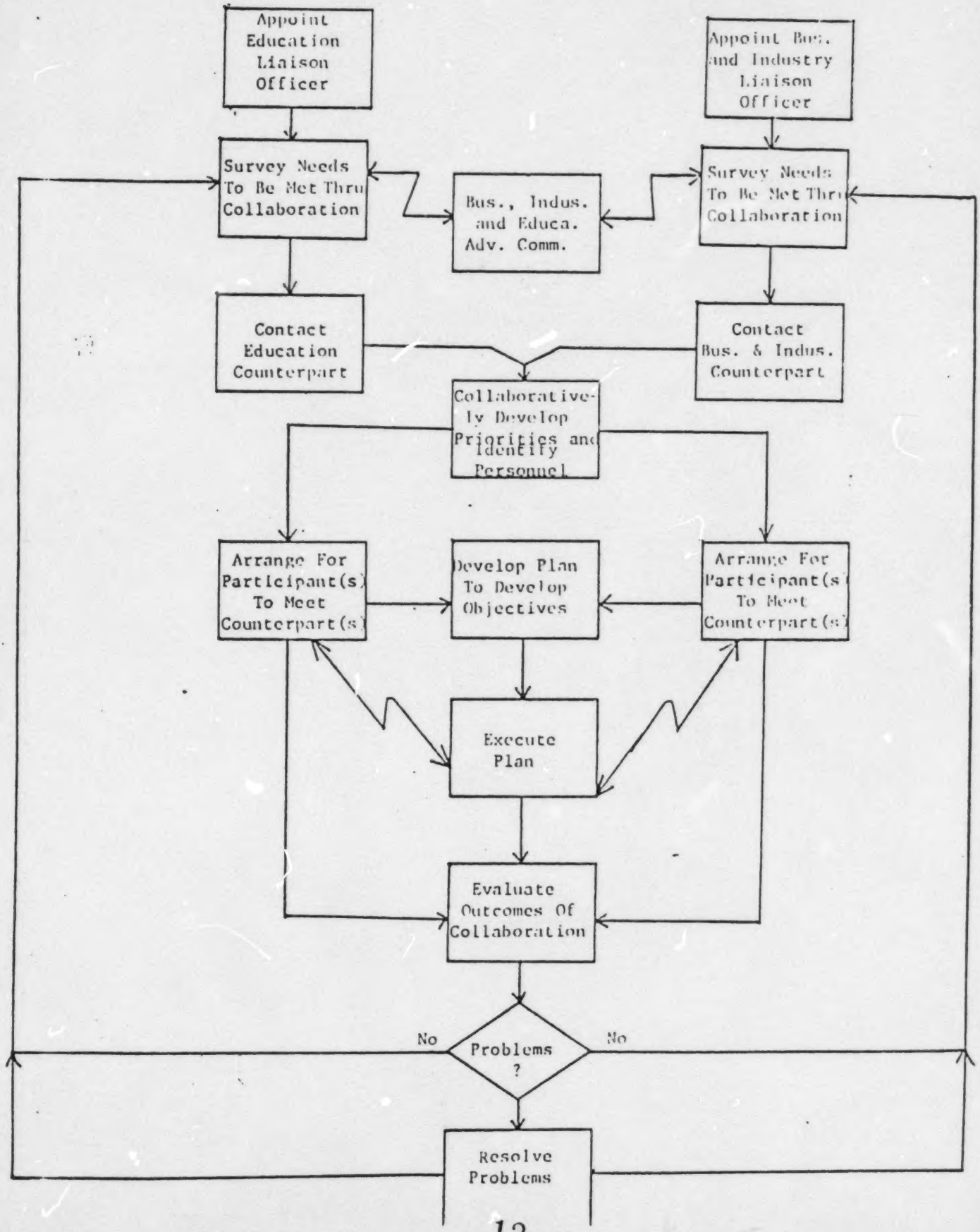
The process for achieving work-education ties, described in the preceding section, assumes practical significance when one is faced with the concrete problem of trying to establish such ties. This section will propose a general model for establishing an on-going interactive relationship between one or more businesses and one or more institutions of higher education.

Three points should be made about the model before it is described. First, this or any model represents only one approach to achieving the objectives at hand. It is, however, an approach which I believe will work. Second, the model does not provide all details, but is sufficiently complete, I think, to provide adequate guidance for any who seek to apply it. Third, the model is, in effect, an elaboration of the process outlined in the preceding section. Hence, it, too is a process or action model. It is depicted as a flowchart on page 10. The dicussion to follow

BUSINESS AND INDUSTRY, AND EDUCATION

Industry and Business

Education


Appoint Education Liaison Officer
Appoint Bus. and Industry Liaison Officer
Survey Needs To Be Met Thru Collaboration
Bus., Indus. and Educa. Adv. Comm.
Survey Needs To Be Met Thru Collaboration
Contact Education Counterpart
Contact Bus. & Indus. Counterpart
Collaboratively Develop Priorities and Identify Personnel
Arrange For Participant(s) To Meet Counterpart(s)
Develop Plan To Develop Objectives
Arrange For Participant(s) To Meet Counterpart(s)
Execute Plan
Evaluate Outcomes Of Collaboration
No
Problems ?
No
Resolve Problems

will be, for the most part, a description of the flowchart.

1. *Create a Business, Industry and Education Advisory Committee.*

This committee must be appointed at the highest possible administrative levels of the participating members and must be constituted of staff who are decision makers at their respective institutions. It makes little difference who initiates the idea -business, education or some third party such as the local Chamber of Commerce or local chapter of a professional society with business (representatives from such organizations could well be members of the advisory group) and education membership. There must, however, be strong advocacy within the top administration of both business and industry for implementing a program of interaction.

The functions of the advisory council during the formative stage will be to establish the broad goals and scope of possible interaction. If it has a sound information base, it might even establish overall priorities for interaction and collaboration. In essence, the initial responsibility of the advisory committee is to establish the intent, guiding policies and parameters of the interaction program. The continuing function of the advisory group will be to give counsel to the program. In large measure, it will reflect upon evaluative information provided it by staff and when called for, set new operating policies or program directions.

2. *Appoint liaison officers at workplace and educational institution.*

For any program to function effectively, someone has to be responsible for day-to-day operation. In this instance, someone needs to be responsible at each participating site. These liaison officers should be appointed by and report as high in the organizations as possible and practicable. There are two considerations here. First, the more highly placed the position, the more importance it will be accorded throughout the organization. Where it is placed administratively is a good measure of the significance attached to it by top administration. Second, if the person is at a high enough level it is less likely that the interaction program will become the project of a single operating unit.

The principal functions of the liaison officers are: to be vigorous advocates of the program; to be effective conduits for collaborative ideas; to develop specific interaction plans with their counterpart; to coordinate "in-house" collaborative projects; and, in concert with their counterpart, keep the advisory committee informed.

3. Liaison officers survey needs.

This and all remaining elements of the process are operational steps to establish and maintain a workplace -education interaction program. In this step the liaison officers independently survey needs within and throughout their organizations to determine possible issues, problems, and concerns that might properly be addressed through collaborative action.

4. Liaison officers interact.

Having developed their lists of needs which may be addressed through interaction, the liaison officers come together to jointly assess and prioritize them. Together they also identify personnel (not necessarily by name but by function and interest) who might best work on specific projects. By principal function, the liaison officers develop within the guidelines set by the advisory council the overall program of interaction.

5. *Arrange for project participants and their interaction.*

Once the liaison officers have jointly developed an agenda of projects and identified potential participants they secure the participants and arrange for them to meet their counterparts. These participants from business and education now collaboratively develop detailed plans for the project.

6. *Participants execute the plan.*

The project participants from business and education assume responsibility for conducting their joint project. The liaison officers will monitor the interactive and collaborative elements of the project, providing, as called-for, counsel on strengthening the ties.

7. *Evaluate the project.*

The liaison officers and the project participants are jointly responsible for assessing the project. The assessment process will focus both on the outcomes of the project (did it accomplish its stated objectives?) and the quality of the interaction and collaboration. If there are problems, the liaison officers and

participants should seek to resolve them. Evaluation of each project and of the program is vital to the growth of the program. It is the responsibility of the liaison officers to keep the advisory committee well advised on the status of the program, so they make informed decisions about its future. At this point, the flowchart shows a loop back to a needs survey so that the process may be continuous.

As noted above, this model is a generalized model and makes pretence of dealing with the myriad of details that any individual effort to establish a program will encounter. Many of these will concern solutions to individual problems that arise and individual circumstances surrounding the particular participants. Solutions to such occurrences will necessitate equally individualized solutions. For example, institutions of higher education wishing to participate in an exchange program with businesses may have to re-think their criteria for promotion and tenure. At the same time, companies may have to revise their policies on seniority.

There will also be problems of financing such interaction

programs. There will be fixed costs associated with its administration and variable costs associated with individual projects. It seems to me that business and education should each be able to manage their own administrative costs. While the essential principle may be that project costs would be shared, it is likely, depending upon the specific nature of collaborative activities, that one or the other may have to assume the major cost burden. Educational institutions are likely to experience particular difficulty in supporting costly projects simply because their opportunities to develop funds for special projects are severely limited. Their usual sources for funds outside their normal operations are state and federal grants, private foundation grants and industry funds or grants. It is quite possible, that discretionary funds exist within state and/or federal agencies which could support specific projects. It is also very possible that private foundations could become interested in supporting collaborative relationships generally. Educational institutions should obviously pursue these avenues of potential funding. Yet, it seems to me also, that business and industry might be called upon to assume a greater share of the costs of collaboration.

DESIGNS FOR COLLABORATION

To this point, the manuscript has argued that a serious need exists to establish more and stronger ties between American

business and American education, has proposed a process for achieving work-education ties, and suggested an approach to establishing such ties. Since, as noted at the outset, I believe linkages between the workplace and education can develop if and only if there exist needs which are perceived as addressable through collaborative action. Hence, this final section of the manuscript will suggest both a number of possible needs that could be met through joint activity and possible collaborative activities for meeting them. They, obviously, are only illustrative. Hopefully, however, they will be sufficient to show that a range of problems may properly be addressed through work-education interaction and, further, will stimulate still other ideas for interaction and collaboration.

A. Issues and problems relating to human resource needs of business and industry and to articulation.

The historic expectation of colleges is that in a period of from two to four years they will develop basic competencies in their students, following which corporations seek to fulfill their human resource requirements by assimilating the graduates. Not always well or without flaw this system, nonetheless, has and continues to work. The principal source of breakdown is the failure of student competencies to cohere adquately with employer needs. This may occur when colleges overproduce students in some given field, relative to need. The reverse may also occur. New technology may require a new kind of competency but no curricula exists to produce it. This phenomenon is illustrated by the need

in the 1960's for computer programmers, before any colleges were geared to produce them. More often, however, disruption in the system occurs because employers find the products of our colleges and universities unable to step directly into jobs of responsibility, for which they are needed and were hired, without considerable additional training. This sometimes leads to heated charges that colleges are not teaching the right things. In turn, faculties respond that they cannot teach students to work for particular companies, that they must teach principles that will prepare students to move into a variety of companies and position. Both are right.

Upgrading and responsibility shifts represent other human resource issues which businesses have to face. Indications are that they will dramatically increase. In many instances companies have undertaken the task by themselves but they have also used continuing education divisions of our colleges and universities extensively. It has been my experience that in this point of contact relationships between work and edcuation have been among the best. With evidence of greater incidence of mid-life career change, with more women entering the labor force for the first time or after years of being out of it and with the daily increment of new knowledge reaching encyclopedic proportions, issues of human resource preparation and development grow more serious.

The proposals to follow are intended to respond to these issues. Most of them, perhaps all, have been used at some time or another and found useful or potentially so. Some have been

used a great deal and I urge only that they be used still more.

(1) Proposals which entail on-site involvement of students.

There are several existing schemes which involve students in the workplace. Some, such as "summer hire" programs are strictly employer initiated and do not really require college participation, except possibly to assist in the identification of prospective students. Most, however, entail a coordinated programmatic effort on the part of both business and education. Internships and practica have a long history, great appeal to many educators in such diverse fields as accounting and social work, and provide students with valuable exposure to their chosen fields. In my judgment, however, the scheme which has had the best track record for serving simultaneously the interests of students, employers and colleges is cooperative education. I believe this plan has the greatest potential for addressing on-going manpower requirements effectively and cost.efficiently.

The essence of cooperative education is that through collaborative arrangements, established by college and employer representatives, work assignments are set aside for students. There are two essential elements to the concept of cooperative education: (1) the work periods are an integral part of the student's total educational program; and (2) the student, when on work assignment, is a productive employee of the company.

The actual modes of implementing co-op have become increasingly diverse, as the number of colleges and universities adopting the

plan increased from 125 in 1969 to 1050 today. It is not appropriate here to catalog the range of differences among programs; it is sufficient to know that each institution's program has resulted from it adopting the defining characteristic of co-op to its unique situation. A number of characteristics might be cited, however, which I and others believe to be singularly important if the maximum mutual benefits are to be achieved.

- *The employer should be reasonably assured of resource continuity.*

It has been the experience of most persons in cooperative education and the near-policy statement of many employers that the "best" work assignments, the jobs that must be done regularly, as opposed to "make-work" jobs are set aside for co-op students only if they can be reasonably assured that the job will be filled at all times.

- *The student should have multiple cooperative work terms with the same employer.*

There are strong reasons to support this proposition. First, research findings show a strong association between the length of time a student co-ops with a company and the likelihood that that student will become a fulltime employee of the company after graduation. This speaks specifically to the human resource issue. There are two principal co-op outcomes which motivate employers to participate: students perform needed tasks well at no greater cost than regular employees; and, there is the prospect of employing the student fulltime after graduation. Research findings

indicate that about 27 percent of those students who work for a company up to six months return as fulltime employees. When students worked with the same company seven to twelve months, the percentage increased to 40 and for longer periods, 53 percent returned as fulltime employees. Concomitantly, other studies have shown that former co-op students tend to be better fulltime employees. Second, recently completed research showed multiple work experiences with the same company, in which new or additional responsibilities were assigned each work period, contributed significantly to the students' career commitment.[5,6]

- *There must be continuing liaison and review between the employer and the institution.*

Experience has consistently demonstrated that co-op is most effective for all concerned--students, institutions, and employers--when communication between college staff and supervisors of co-op students is frequent and open. This communication serves to develop mutual understanding of goals to be served and it encourages the recognition and solution of budding problems.

There is little question that cooperative education, when properly implemented, is a very effective mechanism for meeting employer human resource needs. There have been reported instances

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[5]Steven Frankel, et al., Cooperative Education: A National Assessment (Silver Spring, Maryland: Applied Management Sciences, Contract No. OE-300-75-0343, 1977).

[6]Dena Weinstein, Program Strategies of Cooperative Education and Student Career Decision-Making (Boston, Mass.: Cooperative Education Research Center, 1980).

of companies making plans to supplant their traditional college recruiting totally or nearly so by cooperative education. A second potential outcome of substantial value to both education and work is updating curricula in light of current technology and operating practices. More concerning this in a later section.

Clearly, cooperative education is a program method which serves the individual needs of all concerned: it serves students by providing them opportunities to achieve important learnings, it serves institutions by providing them a significant means of enriching and keeping current their educational programs, and by more obviously making them a part of the community in which they exist; and it serves employers by giving them immediate and long range human resources. Hence, cooperative education is strongly recommended as an effective means of developing work-education collaboration. I think corporations could do much to stimulate efforts to expand co-op at individual colleges. Specifically, they could set aside additional work opportunities for co-op students within the context of training budgets and make this known to the colleges and universities in their locale or to those with which they particularly want to work.

Within this context, it should be noted that the Federal Government is embarking upon an initiative to stimulate development of "comprehensive" cooperative education programs. It is the aim of the Cooperative Education Branch of the Department to assist as many as 25 or 30 institutions to plan and implement very large programs over the next several years. A concomitant of that effort

must be the capability and willingness of employers to provide meaningful work opportunities.

(2) Information exchange and joint planning.

Perhaps the scheme which historically has best served to keep the workplace and educational institutions from going separate and divergent ways is the professional society. Professional societies have been a forum for all within a field; they have been the meeting ground of educator and practitioner. Information has been exchanged through journals and conferences and this has certainly helped our curriculum and production planners to achieve some level of converging effort. What we really seek, however, is a situation in which the principles, theories, methodologies and knowledge which will guide our nation's productivity will also guide our educational efforts.

In my judgment, we need to seek means to extend regular exchanges of information and joint planning efforts beyond those provided by annual meetings of professional societies. There are many ways and formats for achieving this. For example, the staff of some unit of a local business or industry may meet monthly in seminar with the appropriate faculty of a neighboring college for the purpose, initially, of sharing information about what each seeks to accomplish, how they have gone about it and what their needs are. My experience suggests that such seminars or colloquia can move from this descriptive phase into joint planning and even into projects and personnel exchanges.

This format can be extended to multiple companies gettin

together with several colleges. For example, all the corporations requiring engineers might meet with all the colleges which produce engineers to seek solutions to the current and projected shortage of engineers, particularly in the high technology fields.

Of course, one of the important topics these groups should address is the projection of human resource needs over several years. Of equal importance, I think, is the identification of these needs in terms of skills, abilities and knowledge, rather than college majors. This could prove particularly useful within the liberal arts fields.

Although generally on an informal and casual basis, cooperative education, nonetheless, also serves the end of information exchange. Students become the vehicle of exchange as they alternate between the classroom and workplace. This feedback could well spur more systematic efforts to assure appropriate communication between work and education.

(3) Joint projects.

As suggested above, out of discussions may arise projects which can be mutually beneficial. For example, Worcester Polytechnic Institute in Massachusetts instituted, as part of its engineering curriculum, contract arrangements with a number of industries whereby teams of students under the guidance of a faculty member would undertake the analysis and solution of some real problem experienced by the company. This scheme not only helped the companies and provided important practical experience to students, it provided valuable feedback to the institution

and students on the attainment of their educational objectives.

Other joint projects may also be proposed. For example, coteaching of inplant employee courses or, vice versa, team teaching at the college. Insurance companies have probably taken the lead in these kinds of planned interactions.

It is not uncommon practice, and should certainly be encouraged, for corporations with specific employee needs to approach institutions to develop curricula and teach existing company personnel. Often such projects are centered in colleges of continuing education. For many years the Rochester Institute of Technology in New York State has collaborated in this way with the Rochester Industrial Management Council, an organization made up of local industries to plan for their collective futures.

The above proposals have been directed to human resource concerns of business and industry. They are only illustrative of the spectrum of opportunities for joint venture which can provide important mutual understanding, stimulate the easy flow of young people from school to work and tackle the longer range problems of human resource planning.

B. Issues of upgrading and revitalization.

It has long been recognized that after lengthy periods of intensive work professional personnel often "go stale." Universities have their sabbaticals, and industry has introduced general education and executive management programs in collaboration with institutions of higher education. These programs are premised not on

the notion of vacation, but on change of scenery and/or activity. Clearly, need to revitalize and recharge is a problem common to both work and education.

Closely allied to this need for periodic refreshment is the need for upgrading. Often the solution is the same. The rate of advances in new knowledge is so great in most fields that "falling behind" is an ever increasing problem. There are opportunities for educators and practitioners to tackle the twin problems of revitalization and upgrading together.

(1) Exchange.

Not infrequently, when employers and educators come together at conferences or workshops dealing with cooperative education, one or the other will suggest that it might be a good idea if faculty were to co-op in much the way as students. Indeed, an industrial or business fellowship program for faculty would be an excellent idea. But why should it be limited to faculty leaving the classroom? Why not a program of "executive or scientist in residence, as well? The benefits to both could be extraordinary, in terms of change of routine, relationship with new colleagues, facing and contributing to the solution of different problems. And the systems themselves, education and work, will be the beneficiary not only of the contributions to the work at hand, but to the understanding of the "other" system they each take back to their own.

To achieve the potential values inherent in exchanges, it

seems to me that the period of exchange should be an academic or calendar year, certainly no less than one full semester or two quarter terms. Too, the exchange must be carefully planned so that both know what their responsibilities will be. There are obvious difficulties associated with arranging for such exchanges, which probably explains why it hasn't been done more regularly; difficulties of relocation, additional expenses, loss of seniority and even "loss of turf" during protracted absence. I suspect the major impediment, however, is the fact that there is no advocate either at a college or within a company seeking to develop such arrangements. I am convinced that all of the potential problems are solvable and that the rewards of exchange far outstrip the difficulties they present.

(2) Research.

Research is another common ground for many in industry and in education. The difference is that for virtually all industrial researchers that is their fulltime responsibility. In contrast, for most faculty, research is integral to the path toward tenure and promotion, but it is a responsibility to be shared with teaching loads. One frequent consequence of the simultaneous pressure to conduct research and insufficient time to devote to it is poor or trivial research.

This problem could be alleviated were faculty members invited to be members of local industrial research teams. Faculty members would be engaged in research important to the company, would be a part of a thoroughly professional research group and would likely

develop better research skills and make greater contribution to knowledge than if they were to work alone at a university. Getting away from the university might pose some scheduling problems, but here again, the rewards would be worth the time of solution.

There is yet another problem that faculty face with regard to conducting research -- money. For the most part, they must seek support for their research. In some fields there are fairly ample federal sources, such as the National Science Foundation. Even here it is impossible that all worthwhile proposals could be funded and outside the sciences the prospects for external funding are bleak. Further, federal sources appear to favor grants of $25,000 or greater. There are many narrow-focus and pilot-like projects which could have value, which would not be costly, and which are not being conducted for the lack of any support at all.

Most large corporations today have foundations or arrangements whereby they make discretionary grants to colleges for specific projects. For the most part, the monies allocated for this purpose are for programmatic efforts, not research. Industry would contribute to the growth of individual faculty and establish the basis of a collegial relationship between faculty members and staff researchers were it to create "research foundations" for the purpose of providing relatively small sums of money for faculty research. It might be that a company would want only to pass on the merits of proposed research, making decisions to fund or not fund. On the other hand, it could choose to provide a variety of kinds of assistance which would encourage relationship. For example, in the

event of a "good idea" but inadequately designed research proposal the company might assist the faculty person to a better conception. In the case of funded research, the company may provide advisory service, or a forum on company premises to discuss the research and present findings. It might also be that a given company would have research interests but not the facilities or resources for conducting it. In such an event, invitations might be extended to faculty to submit proposals for undertaking the research.

Research is important in the life of most faculty. Many could surely benefit from support and opportunity to interact with full-time industry researchers.

Problems of "staying alive" and "current" are very real. In my judgment, collaborative efforts between corporation and educational institutions could substantially contribute to their solution.

(3) Continuing Education.

There are two groups of employees for whom formal and relatively long term educational programs are essential. First is the employee, usually young, who needs credentialing for entry into a higher level position. Typically this amounts to a series of specialized courses or an advanced degree program. Second is the older employee who, typically because of technical or production modifications, needs to prepare for new, often unspecified job responsibilities. Retraining may take place at the workplace, but at least as often the employee is encouraged to take courses at the local college. The common thread for these two groups is taking "existing courses at the local educational institution."

It seems to me that while on-going continuing education courses may well be exactly what is needed, it is not necessarily the case. Joint identification of competencies needed by the employer and joint planning of specific educational programs to achieve them might well be a more efficacious approach to needed training. If employees can perceive the usefulness of what they seek to learn, they are far more likely to continue and to learn.

C. Issues of finding solutions to specific substantive problems experienced by business or education.

To this point we have addressed broad, catagorical issues -- meeting human resource needs, maintaining relevancy of curricula, upgrading, revitalization. There are many occasions in which individuals, be they from industry or education, have specific substantive problem and need assistance in their solution. They may be relatively simple informational or procedureal problems; or they may be complex problems requiring complex solutions. The thesis of this paper is that often solutions may be more effectively or more quickly found by the educator reaching out to the practitioner or the practitioner seeking assistance from the educator; upon occasion interaction may be essential to any reasonable solution.

It is difficult to suggest programmatic schemes to respond to these individualistic and occasional needs. I am inclined to think they are likely to be most effectively addressed after an institution and business have come to know each other through other contacts. The principal impediments to the personal communication

called for here is not knowing who to contact and reluctance to make a "blind contact." When you know a person to get in touch with, even though not the person who will respond directly, you are far more likely to reach in that direction for assistance. One of the very real payoffs resulting from the various formal arrangements described earlier is that individuals get to know one another and become points of future contact.